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SCIENCE SPOTLIGHT

# Hematopoietic Cell Transplant Survivors Face Late-Occurring Health Complications

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Improvements in hematopoietic cell transplantation (HCT) have resulted in a wider variety of procedures and increased number of transplants for both malignant and non-malignant disorders. Technological advances and improved supportive care have increased short-term survival and resulted in more long-term transplant survivors. Despite this, treatment-related complications persist and overall survival is lower in HCT patients relative to the general population.

To associate HCT with health complications, Dr. Nandita Khera and colleagues in the Clinical Research Division quantify specific health effects in transplant survivors before and after HCT, and correlate these results with measures of overall quality of life. Khera *et al.* focus specifically on the late effects of HCT in a contemporary cohort of transplant survivors, including those receiving unrelated allogeneic grafts, mobilized blood or umbilical cord transplants, and the more frequent use of nonmyeloablative or reduced intensity conditioning regimens to enable HCT for older patients or those with preexisting comorbidities.

Fourteen types of musculoskeletal, endocrine, cardiovascular and organ-specific complications were examined in 1,087 Fred Hutchinson Cancer Research Center HCT survivors through annual follow-up visits or patient questionnaires over approximately three years. Prior to HCT, up to 9.8 percent of all patients had health complications. Five years after transplant, the cumulative incidence of one or more late effects was 44.8 percent in autologous recipients who received their own hematopoietic cells, and 79 percent in allogeneic recipients who received transplants from others. Overall risk for late complications was associated with age greater than 50 years, female sex and having an unrelated donor.

Whereas multiple late effects were rare in autologous recipients, 26 percent of allogeneic recipients had three or more late complications. The most frequent events included thyroid disease, osteoporosis, pulmonary disease and deep vein thrombosis. In addition, diabetes mellitus, adrenal insufficiencies and iron overload were frequent in allogeneic recipients. Survivors with multiple late effects also reported worse physical function, more frequent moderate-to-severe limitations of usual activities, and lower likelihood of full-time study or employment.

These results indicate that current treatment protocols can be further optimized to mitigate long-term complications. Options for advancement include modified transplantation techniques, better supportive and preventative care, and closer monitoring and education of high-risk patients. Furthermore, patients displaying one or more late effects may be particularly suited for screening or preventative measures to limit the number of overall late effects resulting from shared risk factors.

[Khera N, Storer B, Flowers ME, Carpenter PA, Inamoto Y, Sandmaier BM, Martin PJ, and Lee SJ.](#)

Nonmalignant late effects and compromised functional status in survivors of hematopoietic cell transplantation. *J. Clinical Oncology* 30: 71-7.



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